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Southwestern Electric
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November 23, 2020

Ms. Ana Treviño
Central Records
Public Utility Commission of Texas
1701 N. Congress Avenue
P.O. Box 13326
Austin, TX 78711-3326

Re: SOAH Docket No. 473-21-0538, PUC Docket No. 51415 – *Application of Southwestern Electric Power Company for Authority to Change Rates*

Dear Ms. Treviño:

On November 12, 2020 SWEPCO filed the Response to Cities Advocating Reasonable Deregulation's First Set of Request for Information. Attachment 4 to CARD 1-17 was inadvertently not included in the Native File (Zip) on the PUC Interchange. Attachment 4 was however included in the PDF scanned copy.

Attached is Attachment 4 to CARD 1-17.

Please feel free to call me at (512) 481-4562 if you have any questions.

Sincerely,

Grieg Gullickson
American Electric Power
Regulatory Consultant

Attachments

cc: All Parties of Record

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Transmission plant capital project descriptions having a cost in excess of \$2 million

SWEPCO Line Rebuild Program - This program consists of multiple projects completed over a period of several years as part of an ongoing initiative to improve the SWEPCO Transmission System reliability and dependability. It consists of replacing deteriorated and poorly performing transmission lines and switch facilities with identified conditions that include, but are not limited to: broken, split and rotting poles, cross-arms and braces, bending of poles and cross-arms, missing hardware, broken conductor strands, woodpecker damage, etc. The lines rebuilt under this program include all or portions of the following:

- Hughes Springs to Jenkins Tap 69 kV (4.8 miles)
- Greenland to Van Buren Interconnect (VBI) North 69 kV (36.8 miles)
- North Huntington to Waldron West 69 kV (18.7 miles)
- Mt. Pleasant to New Boston 69 kV (42.1 miles)
- Clarendon to Northwest Memphis 69 kV (25.2 miles)
- Northwest Memphis to West Childress 69 kV (33.3 miles)
- Arsenal Hill to Longwood 138 kV (16.3 miles)
- Bann to Sugar Hill 69 kV (1.1 miles)
- Jenkins Tap to Lone Star Power Plant 69 kV (9.0 miles)

Inspections indicate the transmission lines and associated components continue to degrade. As transmission lines are inspected, the number of structures that do not meet the AEP guidelines due to rot, deterioration, and woodpecker damage, continue to increase. The AEP guidelines are built upon the National Electrical Safety Code, which specifies the necessary structural integrity and physical condition of a line to be maintained. On several lines, these numbers have increased to the point where a complete rebuild of the transmission line is warranted. A significant portion of

these lines are over 50 years old, with some facilities approaching 90 years old. As physical deterioration continues on the lines, the performance of the circuits will continue to degrade, and the number of momentary and permanent outages will increase. The increased outage frequencies and duration of the deteriorated lines jeopardize service reliability to customers and the reliability of surrounding areas. An increasing number of outages will have a negative reliability impact on customers served from the affected circuit, and may have a negative power quality impact on customers served from nearby circuits as well. Routine inspection and an increasing number of emergency callouts indicate that the lines and switches are frequently failing to meet AEP specifications. When these conditions are observed, corrective action must be taken to remedy the failed components by emergency replacement or repair. These unplanned activities typically result in higher than normal expenditures.

SWEPCo Station Proactive Rehab Program - This program includes projects to proactively renew transmission assets based on performance, equipment condition, and risk of failure. In light of Asset Health Center reports and field inspections, AEP Transmission determined it necessary to proactively replace equipment at multiple SWEPCO stations to prevent substantial failures that would result in lengthy outages. Among the improvements, the program will replace thirty-two aging transmission circuit breakers and seven transmission transformers at the following stations: Bann, Diana, Dyess, Northwest Texarkana, Patterson, Whitney, and Wilkes. The program also includes smaller station work such as relaying upgrades and capacitor bank replacements at the following stations: Flint Creek, Hyland, Shamrock, Siloam Springs, South Fayetteville, Southwest Shreveport, and Texarkana.

Transmission Asset Replace/Refurbish Program - These projects were part of an ongoing program to improve system reliability and dependability by replacing failed equipment and aging

station equipment that had reached the end of its serviceable life or could no longer be properly maintained due to non-availability of spare parts. This program also included projects to proactively replace deteriorating transmission structures, foundations, poles, cross-arms, conductors, insulators and associated hardware that were identified through inspections.

2013/2014 Asset Replacement Program - The projects under this program were part of an ongoing, multiyear effort to improve system reliability and dependability by replacing failed equipment and strategically replacing selected, obsolete station equipment that had reached the end of its serviceable life and could no longer be properly maintained due to non-availability of parts. In addition, the program was used to selectively replace obsolete and deteriorated transmission structures, foundations, poles, cross-arms, conductors, insulators, and associated hardware.

SWEPCo Region Failure Program - This two year program addressed failures in the Southwestern Electric Power Company (SWEPCo) region. This program only addressed station and line equipment that were indicated as failures.

Cass Tap to Roach – North Texas Electric Cooperative (NTEC) requested a new delivery point and upgrades to the existing Munz City Station. The new delivery point was connected from the West Atlanta to IPC Domino 138 kV line. AEP purchased land and constructed a new 138 kV box bay, Cass Tap Switching Station, consisting of two breakers, one tap switch, and 138 kV metering units. Munz City Station was reconfigured with the installation of two circuit breakers, a new meter and 138 kV metering transformers.

Leaside Way – This project involved the construction of a new 138/69 kV station with a four breaker 138 kV ring bus, 138/69 kV auto transformer, and a single 69 kV line exit. The new

Leaside Way Station eliminates two, three-terminal line arrangements that create relaying difficulties. The mitigation to the difficulties is to delay tripping to allow proper operation, causing longer fault clearing times. These long clearing times resulted in power quality issues for local industrial customers, causing their equipment to trip off. Completion of this project allowed the relay schemes to operate normally providing for faster clearing times and no disruption to the customers.

East Fayetteville - Arkansas Electric Cooperative Corporation (AECC) requested to expand the East Fayetteville delivery point to allow them to convert their 69 kV system in NW Arkansas to 161 kV. To accomplish this request, AEP constructed the East Fayetteville switching station on the Hyland to Osburn 161 kV line to connect to AECC's East Fayetteville Substation. AECC constructed a new AECC East Fayetteville 161 kV switching station and two 161 kV transmission lines from AECC East Fayetteville 161 kV switching station to AEP terminals in the new East Fayetteville switching station.

Hill Lake - Enterprise Products Operating LLC requested service for approximately 14 MW of new load. As a result Southwestern Electric Power Company (SWEPCO) acquired right of way (ROW) to construct a new 1/4 mile double circuit Hill Lake 138 kV Line Extension and 138 kV high side in/out switching Hill Lake Station with supervisory control and data acquisition (SCADA) switches.

Hallsville South Tap - North Texas Electric Cooperative (NTEC) requested a new delivery point. The new delivery point, Hallsville South Tap, is supplied from the Pirkey-Whitney 138 kV Line. AEP constructed a new 138 kV box bay station with a meter and 138 kV meter transformers. AEP also provided a terminal for NTEC's 138 kV line to NTEC's Gum Springs Station. An initial load

of 10 MW was projected.

Wedington Tap - Arkansas Electric Cooperative Corporation (AECC) requested a new delivery point on the Chamber Springs - South Fayetteville line. AEP installed Wedington Tap Station, including a 161 kV box bay structure on the Chamber Springs - South Fayetteville 161 kV Line. AEP provided a terminal for AECC's 161 kV line to its station. Load at the new delivery point was 6 MW.

Morton Saline Sub - SWEPCO constructed a greenfield substation called Morton Station in Grand Saline, Texas. Morton Salt was served from Grand Saline Station (#988). Grand Saline Station is comprised of two non-Load Tap Changing (non-LTC) transformers operated in parallel with a total max capacity of 19.69 Mega Volt-Amp (MVA). These transformers were forecasted to have a load of 19.39 MVA in 2016, which was 98.5% of their rated capacity. This forecast loading was due primarily to the Morton Salt facility adding equipment to increase their salt production capability at their facility in Grand Saline, Texas. The facility manager at Morton Salt sent a letter to SWEPCO requesting that a new substation be constructed in order to serve their future load. Morton Salt signed a new ten-year contract for their anticipated load. Morton Salt transferred the necessary land and easements to SWEPCO for the construction of this new Morton Station (#1169). Morton Station consists of two 25 MVA transformers. One transformer is dedicated service to Morton Salt and the other transformer serves a SWEPCO distribution feeder that will tie back into Grand Saline Circuit 967110 at Texas Highway 110. The combination of this dedicated service to Morton Salt and the distribution feeder tie to Circuit 967110 effectively reduced the loading on the Grand Saline Station to approximately 10 MVA, which would be 50.8% of the rated capacity of the station.

SWEPCo Forestry ROW Widening - This program was for danger tree removal and widening the rights-of-way for SWEPCo Transmission Lines. The NERC standard FAC 003 applies to vegetation management on transmission lines operating at 200 kV and above, plus other, lower voltage lines deemed critical by the Regional Entity to reliable operation of the transmission system. To comply with this standard, AEP Transmission implemented a multi-year plan to widen these reportable facilities to the full easement width.

Transmission Capital Blanket - This program covered projects such as transmission line work, station asset replacements due to failures, public relocation changes made mandatory by the alteration, construction, reconstruction, or relocation of all public projects carried out by a governmental body, and storm recovery costs for minor storm events. These were all projects that individually cost less than \$500,000.

Welsh HVDC Tie - When the Welsh HVDC was originally constructed, both the ERCOT and SPP transmission systems in the Welsh area were tightly regulated by large base load generating plants. However, due to changes in the generation supply curve and the corresponding economic dispatch of the system, this is no longer the case. This lack of tight voltage regulation led to high voltage conditions around the Welsh HVDC and the reduction in local on-line generation also contributed to issues with 5th harmonics, leading to trips of the HVDC. In order to alleviate these conditions, SWEPCo installed reactive compensation and a 5th harmonic filter at the Welsh Station. The Welsh HVDC control system computers and software were also outdated, resulting in maintenance and functionality challenges that reduced the reliability of the HVDC under the existing and future conditions. Those systems were also replaced.

Telecom Fiber Buildout Program - This project is part of an on-going program to provide AEP

Transmission with a strong fiber based telecommunications network with the following key benefits:

- Fiber based protective relaying schemes with diverse communication paths to stations 138kV and higher;
- Fiber based Remote Terminal Unit communication paths (AEP owned and controlled; no leased circuits and associated reliability issues and monthly O&M costs);
- Bandwidth required to backhaul Phasor Measurement Unit data;
- Bandwidth required to backhaul Asset Health data (breakers, transformers, switches, etc.)
- Bandwidth required to backhaul video from multiple security cameras at a station
- North American Electric Reliability Corporation-Critical Infrastructure Protection (NERC CIP) security information (card readers, keypads, sensors, etc.) over AEP controlled telecommunications systems;
- Move AEP microwave radio based backbone telecommunication systems from primary to secondary transport systems;
- Telecommunications transport equipment vendors have been evolving away from microwave to fiber based platforms putting AEP in a position to take advantage of this evolution;
- Microwave based transport systems offer a very small fraction of the bandwidth provided by a fiber optic based system;
- Microwave based transport systems are subject to reoccurring outages due to interference and weather conditions that do not affect fiber based systems;
- Fiber based systems offer additional capacity to meet AEP's future strategic telecommunications requirements; and
- Efficient and reliable operation of the Transmission (and Distribution) systems of the future

will require the bandwidth and resiliency that only a fiber optic based telecommunications system can provide.

SWEPCO Region Major Equipment/Spares Program - The Transmission sparing strategy is based on a probabilistic model that predicts failures based on AEP specific transformer data, historical failure rates and material lead times across every operating company. This strategy creates a required target for spares for each operating company based on current inventory, kV class, and failure rates, among other things. This three-year program (2017-2019) consists of specific asset replacement projects, replacement of failed equipment, and the purchase of major spare and mobile equipment. The program is part of an ongoing effort to improve system reliability and dependability by replacing equipment that has reached the end of its serviceable life, and by purchasing long-lead-time equipment that will become system spares. The equipment purchased will mainly consist of capital spare transformers, spare reactors, spare circuit breakers, mobile transformer stations, and spare transmission line towers. A three-year program allows SWEPCo to secure equipment contracts to leverage our purchases and obtain the best prices for the needed equipment. Having these spares on hand will improve reliability to customers by enabling a quicker restoration in the event of a service interruption, either through the use of a mobile transformer or more timely replacement of failed equipment. For long-lead-time equipment, this can be particularly important as a failure can leave the transmission system in a vulnerable state until new equipment is installed.

Telecom Upgrades - This project was a multi-year effort to replace obsolete equipment that is no longer supported by telecommunication companies by replacing analog leased lines, frame relay circuits (obsolete digital leased line), and tone telemetry installations (obsolete 2-point system alarms). Telecom providers phased out these older technologies, which they will no longer

support, and which AEP Transmission will no longer be able to support due to lack of expertise and unavailability of parts. These upgrades also required the replacement of related station equipment such as older model RTUs that will not support newer technology, and in the case of obsolete tone telemetry, RTUs had to be added to support the newer Telecom technology.

Chamber Springs 345 kV Reactor -. The Chambers Spring reactor was needed to maintain voltage within the allowable range through all seasons in the Northwest Arkansas area but is most heavily needed in spring and fall. In periods of off peak loading Flint Creek generator was unable to maintain its voltage schedule. During these periods the generation unit was consuming max VARs and is still unable to maintain proper voltage. To remedy this, the Flint Creek – Brookline 345kV line had to be taken out of service under these conditions. Installation of the reactor allows SWEPCo to maintain a full intact system including this 345kV tie line and still maintain proper voltage. In order to alleviate the voltage issue, a 345 kV reactor bank and circuit breaker were added at Chamber Spring Substation. The station was expanded on AEP property in order to accommodate the reactor bank.

Valliant to Northwest Texarkana 345 kV Line - This project was mandated by the SPP RTO as a part of their “High Priority Projects” Study and subsequent recommendations. This project provides reliability and economic benefits to the region by increasing west – east transfer capability and enabling more efficient operation of the region’s generation supply.

The Longview Heights to Marshall 69 kV Line - The SPP identified the Longview Heights - Marshall 69 kV line overloaded under contingency conditions. The project received an NTC (Notification to Construct) and was mandatory for regional reliability network upgrades. To remediate the overload condition, this project rebuilt 17.8 miles of the 69 kV line from Longview

Heights – Marshall.

The Brownlee Road to North Market 69 kV Line - The SPP identified and mandated a reliability project to rebuild approximately 4.7 miles of 69 kV transmission line from Brownlee Road to North Market. The existing line overloaded during contingency outage conditions. In addition to the line rebuild, upgrades were completed at the Brownlee Road and North Market Stations.

Evenside to Northwest Henderson 69 kV Line - This is a SPP mandated reliability project needed to address a single contingency overload for the outage of the Northwest (NW) Henderson to Poynter 69 kV line. The project involved the rebuild of the Evenside to Northwest Henderson 69 kV line.

Chamber Springs to Farmington 161 kV Line - This is an SPP mandated reliability project needed to address a single contingency thermal overload. The project involves a rebuild of the 11.1 miles of 161 kV line from Chamber Springs to Farmington. In addition to the line rebuild, terminal equipment was upgraded at the Chamber Springs and South Fayetteville stations.

Broadmoor - Fort Humbug 69 kV - The Southwest Power Pool identified and mandated a reliability project to rebuild approximately 1.7 miles of 69 kV transmission line from Broadmoor to Fort Humbug. The existing line overloaded during contingency outage conditions. In addition to the line rebuild, upgrades were completed at the Broadmoor and Fort Humbug stations.

Ellerbe Road – Lucas 69 kV - This project was mandated by SPP to address the overload of the Ellerbe Road - Lucas 69 kV line for the outage of the South Shreveport - Wallace Lake 138 kV line. To alleviate the overload, AEP rebuilt approximately 3 miles of 69 kV line from Ellerbe Road Station to Lucas Station. Ellerbe Road Station scope included the replacement of the existing

69 kV breaker, installation of a three-phase set of capacitor voltage transformers (CCVT's), and replacement of both arresters and line/breaker relays. Lucas Station scope included the addition of arresters to the 69 kV circuit to Ellerbe Road Station and conduit for fiber from the dead-end structure to the pre-cast cable trench.

Siloam- W Siloam 161kV Rebuild - Southwest Power Pool (SPP) identified in the 2017 SPP Integrated Transmission Planning (ITP) assessment that the Siloam Springs-Siloam Springs City 161 kV will experience overloads during the outage of the Flint Creek-Tonnece 345 kV line. To remediate the overload condition, this project rebuilt 2.1 miles of the 161 kV line from Siloam Springs-West Siloam Springs and remote end work at Siloam Springs Station was required.

Linwood - South Shreveport Line - This project was to rebuild the Linwood to South Shreveport 138 kV transmission line as part of a SPP mandatory project to address the overload that will occur on the line during the outage of the Arsenal Hill to Fort Humbug 69 kV transmission line. During this project, 2.42 miles of the 138 kV line from Linwood to South Shreveport was rebuilt with Aluminum Composite Steel Reinforced (ACSR) conductor wire. Circuit breakers, switches, jumpers and relays were upgraded to at least 2000A at Linwood Station and South Shreveport Station.

Brooks Street - Edwards Street 69 kV Line - This is a SPP mandatory project to address the overload of the Brooks Street - Edwards Street 69 kV line for the outage of the Arsenal Hill - Fort Humbug 138 kV line. The overload was addressed by rebuilding approximately one mile from Brooks Street - Edwards Street. Additionally, Brooks Street Station and Edwards Street Station were upgraded with jumpers, switches, relays, and a new drop in control module was installed at each station.

Daingerfield - Jenkins Tap 69 kV Line - This is a SPP mandatory project for regional reliability network upgrades. SWEPCo rebuilt 1.3 miles of the Daingerfield to Jenkins 69 kV transmission line. The rebuild was needed to address the overload of the Daingerfield to Jenkins transmission line caused by the outage of the Lone Star South to Pittsburgh 138 kV or Welsh Reserve to Wilkes 138 kV.

Messick 500/230kV Station - The Southwest Power Pool has identified and mandated a 2012 Integrated Transmission Planning Near-Term (ITPNT) project to build a new 500/230kV station at Messick. The new station addresses the overload of IP Mansfield to Wallace Lake 138 kV line, which overloads to 108% for the loss of the Dolet Hills to South Shreveport 345 kV line.